

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

Claims 1-17 and 21-24 are pending. Claims 11, 12 and 23 are amended. Support for the amendments can be found, for example, on page 7, lines 25-28. No new matter is introduced by way of these amendments.

Additionally, Applicant has amended the specification to correct an obvious typographical error occurred during translation of the original Italian text into English. On page 7, line 27, the phrase "polymethylmetacrilate" is now amended to "polymethylmethacrylate".

The Examiner has objected to claim 14 and requested that the underline symbol between the phrase "deep UV" and "photo-resist layer" be deleted. Applicant notes, however, the underline symbol in question arose due to a redline correction, namely, Applicant was asked to add a closing quotation mark to the phrase "deep UV" by the Office Action dated January 31, 2005. The symbol is therefore not part of the claim but an indication of an added text. The symbol is automatically removed in the presently submitted claim list.

Applicant thanks the Examiner for the indication of the allowance of claims 1-9, and the allowability of claim 17. The Examiner notes that claim 17 is objected to as being dependent upon a rejected base claim (independent claim 10) but would be allowable if rewritten into independent form. Applicant is not, however, amending claim 17 into independent form because Applicant believe that claim 10 is patentable over the cited references.

The Examiner rejects claims 10-12, 21 and 23-24 as being anticipated by U.S. Patent No. 6, 121,123 to Lyons et al. (hereafter "Lyons). Lyons discloses a BARC layer 18 deposited on a polysilicon layer 16. In rejecting claim 10, the Examiner asserts that the BARC layer 18 is a hydrophobic layer.

Applicant traverses this ground of rejection because, contrary to the Examiner's assertion, Lyons does not disclose or suggest that layer 18 is a hydrophobic layer. Lyons uses a material that works both as a BARC (Bottom Anti-Reflective Coat) and hard mask. It should be noted that many materials are suitable as BARC on account of their abilities to attenuate

reflection. However, a BARC material is not necessarily hydrophobic. Lyons does not teach that layer 18 is hydrophobic.

In contrast, claim 10 of the instant application is directed to a method of etching a semiconductor layer wherein a hydrophobic layer is deposited directly on the semiconductor layer, and a "deep UV" photo-resist layer is deposited on the hydrophobic layer. By positioning a hydrophobic layer between the semiconductor layer to be etched and a "deep UV" photo-resist, the adhesion of the photo-resist layer during the etching of the semiconductor layer can be improved. Claim 10 is therefore directed to using a hydrophobic layer to promote adhesion between the photo-resist and the semiconductor layer during etching. A suitable hydrophobic material is, for example, polymethylmethacrylate. The fact polymethylmethacrylate may also be used as a BARC material is irrelevant for purpose of this application. Lyons does not disclose or suggest that layer 18 is hydrophobic. Accordingly, Applicant respectfully submits that claim 10 is not anticipated by the disclosure of Lyons.

Further more, claims 11 and 22 are amended to more particularly point out that the hydrophobic material can be an organic material selected from: polymethylmethacrylate, polytetrafluoroethylene, polyethylene, polystyrene and polyvinyl chloride. Support for the amendment can be found on page 7, line 26-28. Lyons does not disclose or suggest any of these organic hydrophobic materials, contrary to the Examiner's assertion. Accordingly, Applicant respectfully submits that claims 10-12, 21 and 23-24 are not anticipated by Lyons.

Claims 13, 15 and 16 are rejected under 35 U.S.C. §103(a) as being obvious over Lyons in view of U.S. Patent No. 6,004,843 to Huang (hereafter "Huang"). In particular, the Examiner is of the position that Lyons discloses all the features of the claimed invention but not a step of removing the hydrophobic layer. The Examiner further relies on Huang to assert obviousness of the removal step.

Applicants traverses this ground of rejection for the following reason. As discussed above, Lyons does not disclose all the features of the claimed invention as recited in claims 10, from which claims 13 and 15-16 are dependent. In particular, Applicant notes that Lyons does not disclose or suggest depositing a hydrophobic layer on a semiconductor layer. Likewise, Huang does not disclose or suggest depositing a hydrophobic layer on a semiconductor

layer. The plasma removal step of Huang does not cure the deficiency of Lyons. Accordingly, Lyons and Huang, either alone or together, do not render claims 13, 15 and 16 obvious. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

Claim 14 is rejected under 35 U.S.C. §103(a) as being obvious over Lyons in view of U.S. Patent No. 6,251,774 to Harada (hereafter "Harada"). In particular, the Examiner is of the position that Lyons discloses all the features of the claimed invention but not a step of using a "deep-UV" photo-resist. The Examiner further relies on Harada to assert obviousness of using such a photo-resist.

Applicants traverses this ground of rejection for the following reason. As discussed above, Lyons does not disclose all the features of the claimed invention as recited in claims 10, from which claim 14 is dependent. Most notably, Lyons does not disclose or suggest depositing a hydrophobic layer directly on a semiconductor layer. The using of "deep-UV" photo-resist as described in Harada does not cure the deficiency of Lyons. Accordingly, Lyons and Harada, either alone or together, do not render claim 14 obvious. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

Finally, claim 24 is rejected under 35 U.S.C. §103(a) as being obvious over Lyons in view of U.S. Publication 2005/0110152 to Wang (hereafter Wang). In particular, the Examiner is of the position that Lyons discloses all the features of the claimed invention but not a step of depositing a hydrophobic layer directly on the semiconductor layer. The Examiner further relies on Wang to assert obviousness of depositing the hydrophobic layer directly on the semiconductor layer.


Applicants traverses this ground of rejection for the following reason. As discussed above, Lyons does not disclose all the features of the claimed invention as recited in claims 10, from which claim 24 is dependent. Most notably, Lyons does not disclose or suggest depositing a hydrophobic layer on a semiconductor layer, whether directly on the semiconductor or not. The disclosure in Wang therefore does not cure the deficiency of Lyons. Accordingly, Lyons and Wang, either alone or together, do not render claim 24 obvious. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

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Reply to Office Action dated August 4, 2005

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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